

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No. 10/020,956

example, are constructed such that a pair of tape reels is contained in a cassette case consisting of an upper cassette half and a lower cassette half. The pair of tape reels each has a hub, an upper flange and a lower flange. A tape reel rotates in a state where a magnetic tape has been wrapped around an outer periphery of the hub.

Page 2, delete the second full paragraph and insert the following paragraph:

As the magnetic tape has been made thinner, deformation of the magnetic tape in a width direction thereof has become likely to happen. For example, on occasion of high-speed running or acceleration or deceleration of the magnetic tape in a recording and reproducing apparatus, the magnetic tape may sometimes be deformed in the width direction. In addition, the magnetic tape may sometimes be locally brought into tight contact with guide rollers or the like. That results in the occurrence of curving or weaving of the magnetic tape. Moreover, due to the deformation of the magnetic tape, the ends of the magnetic tape in the width direction may come in contact with the lower face of the upper flange and the upper face of the lower flange, resulting in occurrence of the abrasion powder. This abrasion powder will incur an increase of dropouts. Particularly, when an amount of the magnetic tape wrapped around the hub is small, there will be a long distance from outer circumferential edges of the upper and the lower flanges to a face of the most outer layer of the magnetic tape already wrapped. Therefore, it is difficult to move the magnetic tape for this long distance without a hard or forceful contact with the lower face of the upper flange and the upper face of the lower flange in the width direction. If the magnetic tape comes in forceful contact with one of the lower face of the upper flange and the upper face of the lower

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AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No. 10/020,956

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flange on this occasion, the ends of the magnetic tape may be damaged, or abrasion powder may occur.

Page 3, delete the first full paragraph and insert the following paragraph:

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In the meantime, as the tracks of the magnetic tape have been made narrower, a so-called "linearity defect," wherein reproduction output power at the deformed portion of the tape becomes lower than that at a rectilinear portion, has become likely to occur. Even with a minute deformation of the tape, the linearity defect may occur. The above described weaving of the magnetic tape will incur an increase of the linearity defects, that is, will incur an increase of fluctuations in the reproduction output.

[Page 3, delete the second full paragraph and insert the following:]

Further, a so-called "irregular wrapping" is likely to happen, as the magnetic tape has been made thinner. For example, as shown in Fig. 5, which is an enlarged perspective view of a part A in Fig. 4, a portion of the lateral end of the magnetic tape may jump out from a plane composed of the other lateral ends of the magnetic tape in the width direction. As shown in Fig. 5, the portion 120a of the end of the magnetic tape that has jumped out is deformed so as to meander. When the magnetic tape has been deformed, normal recording and reproduction cannot be expected. Therefore, it is an extremely important problem to prevent such an irregular wrapping.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No. 10/020,956

Page 5, delete the first full paragraph and insert the following:

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The invention has been made in view of the above described circumstances, and its object is to provide a tape reel wherein a magnetic tape can be smoothly wrapped around a hub without incurring damage of the magnetic tape and occurrence of abrasion powder and an irregular wrapping. Its object is also a method of wrapping the magnetic tape around the tape reel.

[Page 5, delete the second full paragraph and insert the following paragraph:]

According to the invention, a tape reel comprising a hub shaped in a cylindrical shape around which a magnetic tape is adapted to be wrapped, an upper flange and a lower flange respectively provided at an upper end and a lower end of the hub is characterized in that the tape reel includes means for gradually decreasing a distance between the upper flange and the lower flange outside an outer peripheral surface of the hub, as the magnetic tape is being wrapped around the hub, by deflecting said upper and lower flanges towards each other over an entire circumference thereof.

[Page 5, delete the third full paragraph and insert the following paragraph:]

Further, according to the invention, a method of wrapping a magnetic tape around a tape reel wherein the tape reel comprises a hub shaped in a cylindrical shape around which the magnetic tape is adapted to be wrapped, an upper flange and a lower flange respectively provided at an upper end and a lower end of the hub is characterized in that a distance between the upper and the lower flanges outside an outer peripheral surface of the hub is gradually decreased, as the magnetic tape is wrapped around the hub.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No. 10/020,956

Page 6, delete the first full paragraph and insert the following paragraph:

According to the above described structure, as the magnetic tape is being wrapped around the hub of the tape reel, a force of tightening the hub (wrapping and tightening force) with the magnetic tape will be increased, and at the same time, the distance between the upper and the lower flanges is gradually decreased. Namely, while an amount of the magnetic tape wrapped around the hub is small, the distance between the upper and the lower flanges is rather large, and the magnetic tape can be moved to a neighborhood of the outer peripheral surface of the hub easily. On the other hand, when the amount of the magnetic tape wrapped around the hub has become large so that an irregular wrapping may be likely to occur, the distance between the upper and the lower flanges is made narrow. Thus, intruded air can be appropriately removed to prevent the irregular wrapping. In addition, deformation of the magnetic tape in the width direction can be also prevented.

Page 8, delete the third full paragraph and insert the following paragraph:

In this embodiment, a width of the magnetic tape 12 is designated as W. A height of the outer peripheral wall 11a of the hub is designated as H1. A distance between the upper and the lower flanges 12, 13 (the distance between the lower face of the upper flange 12 and the upper face of the lower flange 13) is designated as H2 at the most outer circumferential edges of the flanges. A radius of the outer peripheral wall 11a of the hub is designated as R, and a thickness of the outer peripheral wall 11a of the hub is designated as T. A distance from an outer peripheral surface of the outer peripheral wall 11a of the hub to outer circumferential edges of the upper and the lower flanges 12, 13 is designated as L1. As shown in Fig. 3, a distance from

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No. 10/020,956

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the outer peripheral surface of the outer peripheral wall 11a of the hub to the most outer layer of the magnetic tape 20 wrapped around the outer peripheral surface 11a of the hub is designated as L2.

Page 9, delete the second full paragraph and insert the following paragraph:

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In this embodiment, as the magnetic tape 20 is being wrapped around the outer peripheral wall 11a of the hub, a distance between the upper and the lower flanges 12, 13 at the most outer circumferential edges of the flanges (in an outer direction from the outer peripheral surface of the outer peripheral wall 11a of the hub) is gradually decreased as shown in Fig. 3, the distance is set as H2'. Specifically, a distance between one of the outer ends (an upper end in the drawings) of the most outer layer of the magnetic tape 20 in a width direction and the lower face of the upper flange 12 is defined as H3. A distance between the other outer end (a lower end in the drawings) and the upper face of the lower flange 13 is defined as H4. These distances H3 and H4 are respectively always within a certain range.

Page 10, delete the third full paragraph and insert the following paragraph:

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According to the tape reel 10 having the structure as described above, as the magnetic tape 20 is being wrapped around the outer peripheral wall 11a of the hub, the distance between the upper and the lower flanges 12, 13 is gradually decreased. In other words, while the amount of the magnetic tape 20 wrapped around the outer peripheral wall 11a of the hub is small, the distance between the upper and the lower flanges 12, 13 is rather large. Accordingly, the magnetic tape 20 can be smoothly moved to a neighborhood of the outer peripheral wall 11a of the hub. On the other hand, when the amount of the magnetic tape 20 wrapped around the outer